

a secondary effect, and not an immediate consequence of the decomposing power of the electric current.

292. A few observations on what are called the *poles* of the voltaic battery now seem necessary. The poles are represented by surfaces or doors by which the electricity enters into and issues out of the substance suffering decomposition. They are in the extent of that substance in the course of the electric current, being its *terminations* in that direction: hence the electric fluid evolved pass so far and no further.

293. Metals make admirable poles, in consequence of their high conducting power, their immiscibility with the substances generally acted upon, their solid form, and the opportunity afforded of selecting such as are not chemically acted upon by ordinary substances.

294. Water makes a pole of difficult application, except in a few cases (230), because of its small conducting power, its miscibility with most of the substances acted upon, and the general relation to them in respect to chemical affinity, which consists of elements, which in their electrical and chemical relations are directly and powerfully opposed, yet which to produce a body more neutral in its character than water. So that there are but few substances which do not stand in relation, by chemical affinity, with water or one of its elements, and therefore either the water or its elements are likely to be evolved and assist in transferring the infinite variety of bodies in association with it, can be placed in the course of the electric current. Hence the reason why it so rarely happens that the evolved substances rest at the first surface of the battery, and why it therefore does not exhibit the ordinary action.

295. Air, however, and some gases are free from objection, and may be used as poles in many cases (230); but, in consequence of the extremely low degree of conducting power belonging to them, they cannot be employed in the voltaic apparatus. This limits their use; for the apparatus is the only one as yet discovered which affords a sufficient quantity of electricity (107, 112) to effect chemical decomposition with facility.

296. When the poles are

liable to the chemical
the substances evolved, either
simply in consequen
natural relation to them, or of that
relation aided by tl:

¹ Refer for proof of the truth of this
supposition to 483,
December 1838.